

## **Contaminated Sites**

### **Summary of Technical Memorandum**

Database review and field investigations were conducted in both Michigan and Indiana to determine the potential for contaminated soils or groundwater which may impact or be impacted by the proposed project. Sites with potential contamination impacts were narrowed to those within the recommended search distances established by the American Society for Testing and Materials (ASTM). The probable risk posed by all potential contaminated sites within the ASTM search distances were evaluated using a ranking of high, moderate, and low risk values. This risk evaluation was based on the proximity of the site to the proposed alternative, the inherent risk of the site as documented, the presumed direction of groundwater flow, and professional judgment. All sites defined as high risk sites are located either within or immediately adjacent to the proposed ROW for the Build Alternatives. Sites rated as moderate and low risk are found both within the proposed ROW for the Build Alternatives and outside the ROW but within ASTM search distances.

A summary of the results of the investigation follows. Further details of the risks of these sites are discussed in the **Draft Contaminated Sites and Sites of Environmental Interest Technical Memorandum**, available from MDOT. All contaminated waste site terms in the following discussion are defined in **Section 10.0, Glossary of Terms**.

*Impacts of a No-Build Alternative:* The No-Build Alternative would have no impact to existing contaminated sites or sites of environmental interest.

*Impacts of PA-1:* PA-1 has 45 possible sites located within the ASTM recommended search distance. Of the 45 potential waste sites located within the ASTM search distance for PA-1, 20 are located within or immediately adjacent to the proposed ROW. These sites include one State Hazardous Waste Site, nine underground storage tank (UST) sites, four leaking underground storage tank (LUST) sites, three aboveground storage tank (AST) sites, one petroleum pipeline, and two auto/salvage dumps.

**Table A.9.1 PA-1 Potential Contaminated Site Impacts**, lists the impacts of PA-1.

**Table A.9.1 PA-1 Potential Contaminated Site Impacts**

| Ref. No. | Facility Name/Type                   | Facility Location                 | Environmental Risk                     | Info Source | Risk     |
|----------|--------------------------------------|-----------------------------------|--|-------------|----------|
| 50       | Bealert Farm                         | 15124 Broadway Rd                 | UST                                    | database    | low      |
| 51       | Travel Accessories Manufacturing Co. | 15016 W M-60                      | State Haz Waste Site, generator        | database    | moderate |
| 52       | Three Rivers Wilbur Vault Inc.       | 15171 W M-60                      | LUST, UST                              | database    | moderate |
| 52       | Vetter Auto Sales                    | 151—W M-60                        | Possible UST, small quantity generator | site recon  | low      |
| 70       | residence                            | north of Garbe Rd                 | AST                                    | site recon  | low      |
| 71       | residence/farm                       | north of Zerber Rd                | 2 ASTs                                 | site recon  | low      |
| 76       | Amoco Gas Company pipeline           | north of Millers Mill Rd          | Petroleum pipeline                     | site recon  | low      |
| 105      | abandoned service station            | north of Dickinson Rd             | Possible UST                           | site recon  | low      |
| 110      | White Pigeon State Police Post       | 15038 US Hwy 12                   | LUST, 2 USTs                           | database    | high     |
| 110      | abandoned service station            | east of State Police              | possible UST                           | site recon  | low      |
| 112      | fruit market McDonald's              | 15093 US Hwy 12                   | LUST, 3 USTs                           | database    | low      |
| 115      | Jackson Tire Company                 | US Hwy 131, White Pigeon          | possible UST                           | site recon  | low      |
| 116      | Platz Excavating                     | 69025 US 131, White Pigeon        | LUST, 2 USTs                           | database    | moderate |
| 117      | Red Shed Paint & Collision Service   | 69215 US 131, White Pigeon        | small quantity generator               | database    | low      |
| 119      | Centurion Vehicles                   | US 131 north of Indian Prairie Rd | possible generator                     | site recon  | low      |
| 120      | Cabriolet Custom Vehicles            | US 131 north of Indian Prairie Rd | possible generator                     | site recon  | low      |
| 121      | residence/farm                       | Indian Prairie Rd                 | ASTs                                   | site recon  | low      |
| 124      | Medtech Custom Fabricators           | Stone Lake Rd                     | possible generator                     | site recon  | low      |
| 139      | residence/farm                       | north of Drummond                 | dump/salvage yard                      | site recon  | moderate |
| 140      | Eagle Auto Parts                     | Wilbur Rd                         | automobile salvage yard                | site recon  | high     |

Those sites that were determined to be of low risk have minimal probability to have impacted the soil or groundwater within the ROW. Risks to human health or the environment are therefore not expected from these sites.

The Travel Accessories Manufacturing Company is a state hazardous waste site. Soil at this facility has been contaminated with trichloroethylene and benzene, toluene, ethylbenzene, and xylene (BTEX). These contaminants have the potential to cause the following health effects.

Trichloroethylene (TCE) is a manufactured chemical that is widely used as a solvent or degreasing agent. TCE is volatile organic chemical that vaporizes easily and can therefore result in an inhalation hazard. TCE exposure can result from either inhalation or ingestion and it is a known carcinogen. Moderate exposures can cause symptoms similar to alcohol inebriation. Death due to ventricular fibrillation has occurred following heavy exposures. Organ systems affected by overexposure include the central nervous system, respiratory system, liver, kidneys, lungs, heart, and skin.

BTEX frequently co-occur at hazardous waste sites since these constituents are commonly used as solvents in paints and coatings and are constituents of petroleum products. These chemicals vaporize and can be both inhalation and ingestion hazards. Each of these chemicals can be absorbed and extensively metabolized, but do not persist in the body for long periods of time. All of the BTEX chemicals can produce neurological impairment. In addition, exposure to benzene can cause hematological effects, including aplastic anemia and acute myelogenous leukemia.

The risk of the Travel Accessories Manufacturing Company has been judged to be moderate. Soil contamination is most likely localized to the immediate facility. Risk to human health of local residents or users of the roadway are therefore minimal. There could be a risk to the health of workers during the construction of the roadway while soil excavation is occurring. This risk can be minimized either through laboratory testing of the soil to determine actual levels and location of soil contamination and by requiring construction workers to use appropriate personal protection equipment during construction. Construction workers should refrain from smoking cigarettes and ingesting food when working within areas that have the potential for contaminated soil; these activities would increase the risk of inhalation or ingestion exposure.

The USTs located within/adjacent to the proposed ROW have a minimal probability to have impacted the soil or groundwater within the ROW. The LUSTs, however, possess a moderate risk to human health and the environment. It is assumed that the LUSTs have resulted in only localized soil contamination from the contents of the tanks. It is most likely that these tanks contained gasoline or fuel oils. These contaminants have the potential to cause the following health effects to the road construction workers.

Typically, automotive gasoline contains more than 150 chemicals, including small amounts of benzene and toluene. Many of the harmful effects are due to the individual chemicals in the gasoline mixture. Inhalation can cause irritation in the lungs, ingestion can cause irritation to the stomach lining, and physical contact can cause skin irritation. Exposure to higher concentrations can cause harmful effects on the nervous system. Serious nervous system effects include the inability to breath or coma. Inhalation or ingestion of large amounts can cause death.

Historically, automotive gasoline contained lead and older LUSTs are known to have caused lead contamination within surrounding soil. Most human exposure of lead occurs through ingestion or inhalation. Once absorbed into the body, lead is likely to be stored for long periods in teeth and bones, and then released again into the bloodstream during times of calcium

deficiencies. Lead is a systemic poison that can affect a variety of organ systems, including the nervous system, kidneys, reproductive system, blood formation, and gastrointestinal system.

Fuel oils are produced by different petroleum refining processes, depending on their intended use. Fuel oils may be used for engines, lamps, heaters, furnaces, or as solvents. Inhalation of some fuel oils for short periods may cause nausea, eye irritation, increased blood pressure, headache, light-headedness, loss of appetite, poor coordination, and difficulty concentration. Long term exposure to diesel fuels can cause kidney damage. Ingestion of kerosene can cause vomiting, diarrhea, coughing, stomach cramps, drowsiness, restlessness, painful breathing, irritability, or unconsciousness. Larger exposures to kerosene may cause convulsions, coma, or death. Skin contact for short periods of time may cause skin irritation or peeling.

The risk of the facilities which have LUSTs has been judged to be moderate. Soil contamination is most likely localized to the immediate area of facilities. Risk to the health of local residents or users of the roadway are therefore minimal. There could be a risk to the health of workers during the construction of the roadway while soil excavation is occurring. This risk can be minimized either through laboratory testing of the soil to determine actual levels and location of soil contamination and by requiring construction workers to use appropriate personal protection equipment during construction. Construction workers should refrain from smoking cigarettes and ingesting food when working within areas that have the potential for contaminated soil; these activities would increase the risk of inhalation or ingestion exposure.

Two automobile/salvage yards are located within the ROW for PA-1. One has been determined to be a moderate risk because of its smaller size and the second has been determined to be a high risk due to its larger size. Both of these facilities have the potential to have similar impacts and types of soil contamination. Automobile/salvage yards have the potential to contaminate soil with polychlorinated biphenyls (PCBs); lubricating oils; solvents; automobile fluids such as antifreeze and waste oil; heavy metals such as lead, mercury, and arsenic; and asbestos. These contaminants have the potential to cause the following health effects.

Lubricating oils, solvents, and waste oils can all be classified as petroleum hydrocarbons. Petroleum hydrocarbons include hundreds of chemical compounds that are all derived from crude oil. Health effects depend on many factors, including the type of compound, how long the exposure lasts, and the amount of chemical contacted. The most common petroleum hydrocarbons that would be expected to occur as a result of an automobile/salvage yard include BTEX and automotive gasoline. The health affects of these constituents have been discussed above and include effects on the lungs, central nervous system, kidneys, blood, immune system, skin, and eyes.

PCBs are mixtures that were once widely manufactured as insulators for electrical equipment. They can be found in insulating liquid, synthetic rubber, plasticizers, tiles, inks, paints, and oils. PCBs are very stable chemicals and can persist within the environmental for long periods of time. Generally not volatile, they pose an ingestion hazard, can be absorbed through the skin, and can be inhaled when burned. PCBs are carcinogens. Short term exposure can cause eye irritation, skin irritation, fever, nervous system impacts, blood impacts, liver damage, vomiting, and diarrhea. PCBs are potent liver toxins and prolonged exposure can cause hepatitis and reproductive system impacts.

Propylene glycol or ethylene glycol can be used in the manufacture of antifreeze, automobile coolants, or brake fluid; they are chemicals that have similar physical and chemical properties,

but different effects on human health. Both compounds can mix with water and soak into the soil. Once located within the soil, the chemicals can be inhaled, ingested, or absorbed through skin. Small exposures of either chemical are very unlikely to cause harm. Repeated exposures to ethylene glycol can affect kidney function. Swallowing large amounts can be fatal. Repeated exposures to propylene glycol can cause eye, skin, nasal, or oral cavity irritation. Swallowing large amounts are unlikely to cause serious illness.

Mercury is a metal that is very toxic due to its solubility in human tissues and high membrane permeability. Primary entry routes include inhalation, ingestion, and absorption through the skin. Mercury and its vapor can be rapidly absorbed through respiratory and gastrointestinal membranes; upon entry into the body, it bioaccumulates within the brain, kidneys, and liver. Short term, acute effects include erosion of the respiratory or gastrointestinal membranes, headaches, and chest pain. Long term exposure can result in health effects to the skin, eyes, respiratory system, nervous system, and kidneys.

Arsenic compounds can be ingested, inhaled, or absorbed through the skin. They are known to be irritants of the skin, mucous membranes, and eyes. Prolonged contact results in blood congestion, nervous system impacts, and alteration of the brain structure. Long term exposure can lead to permanent liver, nervous system, or blood damage. Arsenic is also a known human carcinogen.

Asbestos is a group of six different fibrous minerals that naturally occur in the environment. Asbestos is used for a wide range of manufactured goods, including automobile clutch, brake, and transmission products and heat resistant fabrics used in upholstery. Asbestos fibers do not break down in the environment, and they are not able to move through soil. Asbestos mainly affects the lungs and the membrane that surrounds the lungs. Breathing lower levels of asbestos may result in changes to the pleural membrane. These changes are usually not serious, but higher exposures can lead to a thickening of the pleural membrane that may restrict breathing. High exposures to asbestos for a long time may result in scar tissue within the lungs, causing asbestosis or cancer. Asbestosis is a serious disease that leads to disability and death. Cigarette smoking increases the risk of asbestos causing cancer.

Although the potential for the soil to be impacted by these constituents is high, the contamination would be localized to the immediate area of the facility and the levels of contamination would most likely be low. For this reason, it is not expected that the risk to human health of local residents, users of the roadway, or construction workers would be significant. Any risk to the health of workers during the construction of the roadway while soil excavation occurs could be minimized either through laboratory testing of the soil to determine actual levels and location of soil contamination or by requiring construction workers to use appropriate personal protection equipment during construction. Construction workers should refrain from smoking cigarettes and ingesting food when working within areas that have the potential for contaminated soil; these activities would increase the risk of inhalation or ingestion exposure.

Impacts of PA-2: PA-2 has 56 possible sites located within the ASTM recommended search distance. Of the 56 potential waste sites located within the ASTM search distance for PA-2, 19 are located within or immediately adjacent to the proposed ROW. These sites include eight UST sites, four LUST sites, two AST sites, one petroleum pipeline, and one auto/salvage dump.

**Table A.9.2 PA-2 Potential Contaminated Site Impact** lists the impacts of PA-2.

**Table A.9.2 PA-2 Potential Contaminated Site Impact**

| Ref. No. | Facility Name/Type                 | Facility Location                 | Environmental Risk       | Info Source | Risk     |
|----------|------------------------------------|-----------------------------------|--------------------------|-------------|----------|
| 37       | Monton Buildings                   | Intersection M-60 and Rt 131      | UST                      | database    | low      |
| 70       | residence                          | north of Garber Rd                | AST                      | site recon  | low      |
| 71       | residence/farm                     | north of Zerbe Rd                 | 2 ASTs                   | site recon  | low      |
| 76       | Amoco Gas Company pipeline         | north of Millers Mill Rd          | Petroleum pipeline       | site recon  | low      |
| 105      | abandoned service station          | north of Dickenson Rd             | Possible UST             | site recon  | low      |
| 110      | White Pigeon State Police Post     | 15038 US Hwy 12                   | LUST, 2 USTs             | database    | high     |
| 110      | abandoned service station          | east of State Police              | possible UST             | site recon  | low      |
| 111      | Speedway                           | 14973 US Hwy 12                   | LUST, 10 USTs            | database    | high     |
| 112      | fruit market McDonald's            | 15093 US Hwy 12                   | LUST, 3 USTs             | database    | low      |
| 113      | Fortune Homes                      | US Hwy 131                        | possible generator       | site recon  | low      |
| 114      | industrial area                    | US Hwy 12                         | possible generator/s     | site recon  | low      |
| 115      | Jackson Tire Company               | US Hwy 131, White Pigeon          | possible UST             | site recon  | low      |
| 111      | Speedway                           | 14973 US Hwy 12                   | LUST, 10 USTs            | database    | high     |
| 116      | Platz Excavating                   | 69025 US 131, White Pigeon        | LUST, 2 USTs             | database    | moderate |
| 117      | Red Shed Paint & Collision Service | 69215 US 131, White Pigeon        | small quantity generator | database    | low      |
| 119      | Centurion Vehicles                 | US 131 north of Indian Prairie Rd | possible generator       | site recon  | low      |
| 120      | Cabriolet Custom Vehicles          | US 131 north of Indian Prairie Rd | possible generator       | site recon  | low      |
| 124      | Medtech Custom Fabricators         | Stone Lake Rd                     | possible generator       | site recon  | low      |
| 139      | residence/farm                     | north of Drummond                 | dump/salvage yard        | site recon  | moderate |

Those sites that were determined to be of low risk have minimal probability to have impacted the soil or groundwater within the ROW of PA-2. Risks to human health or the environment are therefore not expected from these sites.

The USTs located within/adjacent to the proposed ROW have a minimal probability to have impacted the soil or groundwater within the ROW. The LUSTs, however, possess a moderate risk to human health and the environment. It is assumed that the LUSTs have resulted in localized soil contamination from the contents of the tanks. It is most likely that these tanks contained gasoline or fuel oil. Human health risks from these types of contaminants have been discussed above under Build Alternative PA-1 and similar precautions should be taken.

One salvage yard is located immediately adjacent to the ROW for PA-2. It has been determined to be a moderate risk due to its location. This facility has the potential to have resulted in soil contamination. Salvage yards have the potential to contaminate soil with polychlorinated biphenyls (PCBs); lubricating oils; solvents; automobile fluids such as antifreeze and waste oil; heavy metals such as lead, mercury, and arsenic; and asbestos. Human health risks from these types of contaminants have been discussed above under Build Alternative PA-1 and similar precaution should be taken.

**Impacts of PA-3:** PA-3 has 34 possible waste sites located within the ASTM recommended search distance. Of the 34 potential waste sites located within the ASTM search distance for PA-3, nine are located within or immediately adjacent to the proposed ROW. These sites include one State Hazardous Waste site, three UST sites, one LUST site, two AST sites, one petroleum pipeline, and two auto/salvage dumps. **Table A.9.3 PA-3 Potential Contaminated Site Impacts** lists the impacts of PA-3.

**Table A.9.3 PA-3 Potential Contaminated Site Impacts**

| Ref. No. | Facility Name/Type                   | Facility Location        | Environmental Risk                     | Info Source | Risk     |
|----------|--------------------------------------|--------------------------|--|-------------|----------|
| 50       | Bealert Farm                         | 15124 Broadway Rd        | UST                                    | database    | low      |
| 51       | Travel Accessories Manufacturing Co. | 15016 W M-60             | State Haz Waste Site, generator        | database    | moderate |
| 52       | Three Rivers Wilbur Vault Inc.       | 15171 W M-60             | LUST, UST                              | database    | moderate |
| 52       | Vetter Auto Sales                    | 151—W M-60               | Possible UST, small quantity generator | site recon  | low      |
| 70       | residence                            | north of Garber Rd       | AST                                    | site recon  | low      |
| 71       | residence/farm                       | north of Zerbe Rd        | 2 ASTs                                 | site recon  | low      |
| 76       | Amoco Gas Company pipeline           | north of Millers Mill Rd | Petroleum pipeline                     | site recon  | low      |
| 139      | residence/farm                       | north of Drummond        | dump/salvage yard                      | site recon  | moderate |
| 140      | Eagle Auto Parts                     | Wilbur Rd                | automobile salvage yard                | site recon  | high     |

Those sites that were determined to be of low risk have minimal probability to have impacted the soil or groundwater within the ROW of PA-3. Risks to human health or the environment are therefore not expected from these sites.

The Travel Accessories Manufacturing Company is a state hazardous waste site. Soil at this facility has been contaminated with trichloroethylene and BTEX (benzene, toluene, ethylbenzene, and xylene). Human health risks from these types of contaminants have been discussed above under Build Alternative PA-1 and similar precautions should be taken.

Two automobile/salvage yards are located within the ROW for PA-3. One has been determined to be a moderate risk because of its smaller size and the second has been determined to be a high risk due to its larger size. Both of these facilities have the potential to have similar impacts and types of soil contamination. Automobile/salvage yards have the potential to contaminate soil with polychlorinated biphenyls (PCBs); lubricating oils; solvents; automobile fluids such as antifreeze and waste oil; heavy metals such as lead, mercury, and arsenic; and asbestos. Human health risks from these types of contaminants have been discussed above under Build Alternative PA-1 and similar precautions should be taken.

Impacts of PA-4: PA-4 has 28 possible waste sites located within the ASTM recommended search distance. Of the 28 potential waste sites located within the ASTM search distance for PA-4, five are located within or immediately adjacent to the proposed ROW. These sites include one UST site, two AST sites, one petroleum pipeline, and two auto/salvage dumps. **Table A.9.4 PA-4 Potential Contaminated Site Impacts** lists the impacts of PA-4.

**Table A.9.4 PA-4 Potential Contaminated Site Impacts**

| Ref. No. | Facility Name/Type         | Facility Location        | Environmental Risk      | Info Source | Risk     |
|----------|----------------------------|--------------------------|-------------------------|-------------|----------|
| 67       | residence                  | north of Gleason Rd      | AST                     | site recon  | low      |
| 76       | Amoco Gas Company pipeline | north of Millers Mill Rd | Petroleum pipeline      | site recon  | low      |
| 77       | Harold Mann                | 65057 Shaffer Rd         | 4 USTs, ASTs            | database    | low      |
| 139      | residence/farm             | north of Drummond        | dump/salvage yard       | site recon  | moderate |
| 140      | Eagle Auto Parts           | Wilbur Rd                | automobile salvage yard | site recon  | high     |

Those sites that were determined to be of low risk have minimal probability to have impacted the soil or groundwater within the ROW of PA-4. Risks to human health or the environment are therefore not expected from these sites.

Two automobile/salvage yards are located within the ROW for PA-4. One has been determined to be a moderate risk because of its smaller size and the second has been determined to be a high risk due to its larger size. Both of these facilities have the potential to have similar impacts and types of soil contamination. Automobile/salvage yards have the potential to contaminate soil with polychlorinated biphenyls (PCBs); lubricating oils; solvents; automobile fluids such as antifreeze and waste oil; heavy metals such as lead, mercury, and arsenic; and asbestos. Human health risks from these types of contaminants have been discussed above under Build Alternative PA-1 and similar precautions should be taken.

Impacts of PA-5: Although PA-5 has 42 possible waste sites located within the ASTM recommended search distance, only those located within the recommended search distance on



portions of the corridor where ground disturbance will occur are being considered here. When only considering the sites within the ASTM recommended search distance of the by-pass portion of the alignment, PA-5 has two sites located within or immediately adjacent to the proposed ROW. These sites include one AST site and one petroleum pipeline. **Table A.9.5 PA-5 Potential Contaminated Site Impacts** lists the impacts of PA-5.

**Table A.9.5 PA-5 Potential Contaminated Site Impacts**

| Ref. No. | Facility Name/Type         | Facility Location   | Environmental Risk | Info Source | Risk |
|----------|----------------------------|---------------------|--------------------|-------------|------|
| 71       | residence/farm             | north of Zerber Rd  | 2 ASTs             | site recon  | low  |
| 76       | Amoco Gas Company pipeline | north of Millers Rd | Petroleum pipeline | site recon  | low  |

Those sites that were determined to be of low risk have minimal probability to have impacted the soil or groundwater within the ROW. Risks to human health or the environment are therefore not expected from these sites.

Impacts of PA-5 MOD: Although PA-5 MOD has 45 possible waste sites located within the ASTM recommended search distance, only those located within the recommended search distance on portions of the corridor where ground disturbance will occur are being considered here. When only considering the sites within the ASTM recommended search distance of the by-pass portion of the alignment, PA-5 MOD has four sites located within or immediately adjacent to the proposed ROW. These sites include two AST sites, one UST site, and one petroleum pipeline. **Table A.9.6 PA-5 MOD Potential Contaminated Site Impacts** lists the impacts of PA-5 MOD.

**Table A.9.6 PA-5 MOD Potential Contaminated Site Impacts**

| Ref. No. | Facility Name/Type           | Facility Location   | Environmental Risk | Info Source | Risk |
|----------|------------------------------|---------------------|--------------------|-------------|------|
| 71       | residence/farm               | north of Zerber Rd  | 2 ASTs             | site recon  | low  |
| 75       | residence/farm               | north of Millers Rd | AST                | site recon  | low  |
| 76       | Amoco Gas Company pipeline   | north of Millers Rd | Petroleum pipeline | site recon  | low  |
| 82       | Amoco/Citco Gasoline Station | 397 N. Washington   | 5 USTs             | database    | low  |

Those sites that were determined to be of low risk have minimal probability to have impacted the soil or groundwater within the ROW. Risks to human health or the environment are therefore not expected from these sites.